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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,856	03/29/2004	Ganjiang Feng	839-1055	9113

30024 7590 03/23/2006

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EXAMINER

BALDWIN, GORDON

ART UNIT PAPER NUMBER

1775

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

*Cal*

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/810,856		FENG ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Gordon R. Baldwin		1775	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 December 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                    |                                                                             |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____                                                |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>05/03/2004</u>                                                            | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-17 are rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. pat. No. 4,585,481 (Gupta, et al.).**

Gupta teaches improved coating compositions for the protection of nickel-based or cobalt-based superalloys at elevated temperatures. The MCrAlY-base coating compositions taught by Gupta contain preferred amounts of silicon and cobalt with elemental ranges that overlap applicants' claimed silicon and cobalt elemental range limits. Although the applicants do not refer to the usage of hafnium in the claimed MCrAlY-base coating compositions, all of applicants' claimed utilize broad claim language which permits the inclusion of other suitable alloying elements in the MCrAlY-base coating compositions taught by Gupta possess excellent resistance to hot corrosion and have extended coating life under conditions of cyclic oxidations. See lines 54 to 68 in column 1, lines 8 to 50 in column 2, and lines 17 to 22 in column 4. Also, see figure 1 for the long-term thermal/oxidation properties of MCrAlY-base overlay coatings, which contain Si, Hf, and Co. Gupta differs from the claims in that Gupta does not specify the usage of a ceramic layer bonded to a MCrAlY-base overlay coating.

It would have been obvious to one having ordinary skill in the art at the time of invention to have selected the appropriate amounts of silicon, hafnium, and cobalt in MCrAlY-based compositions which offer the best oxidation resistance and high temperature performance because Gupta provides sufficient information about the long-term elevated temperature/oxidation stabilization of MCrAlY-base overlay coatings containing silicon, hafnium, and cobalt. A person skilled in the art of overlay (or bonding) coatings for superalloy substrates would have been motivated to rely on Gupta because a result effective variable (such as long-term elevated temperature/oxidation stability of MCrAlY-base overlay coatings containing Si, Hf, and Co can be optimized by a skilled person in order to achieve a recognized result (such as extended overlay coating life; line 17 to 22 in column 4 of Gupta). Also, the Examiner believes that a skilled person would readily appreciate that an overlay (or bond) coating that possesses and extended coating life in accordance with the teaching of Gupta would definitely serve as a suitable substrate for another thermal coating such as a ceramic coating. See In re Boesch, 617 F. 2d 272,205 (USPQ 215 (CCPA 1980)). Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical.

### ***Response to Arguments***

Applicant argues that the layer of Gupta would not necessarily lead to a good TBC spallation life when used as a TBC bond coating. Applicant also states that in the

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instant specification it is demonstrated that there is a deletrious effect on TBC spallation life when the level of Co increases above about 5 wt% in MCrAlY based bond coats and that one of ordinary skill would not have expected Gupta to achieve a stabilization of the adherence of a ceramic layer to a bond coat of a TBC having silicon in the bond coat and maintaining Co between 0-5 wt%.

The claims require a method of stabilizing adherence of a ceramic layer to a bond coat by incorporating silicon into the bond coat and maintaining Co at a level of 0-5 wt%. The dependant claims go on to further limit the composition of the bond coat. Gupta clearly teaches a bond coating of MCrAlY having Cr of 15-25 wt%, Al of 10-20 wt%, Y of 0.1-2.0 wt%, Si of 0.1-7 wt%, and the balance Ni. This clearly overlaps with applicants claimed ranges. Indeed, Gupta teaches that cobalt may be at a minimum of 0 wt%. Regarding claims 11 and 17, Gupta does not teach the exact same proportions as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the compositional proportions taught by Gupta overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

“The normal desire of scientists or artisans to improve  
upon what is already generally known provides the

motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages”, In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Therefore, since Gupta teaches a layer having a similar composition, with overlapping ranges, it's characteristics of adherence stabilization are expected to also be commensurate. The rejection is maintained.

### **Conclusion**

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

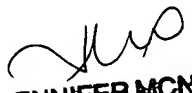
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon R. Baldwin whose telephone number is (571)272-5166. The examiner can normally be reached on M-F 7:45-5:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GRB

  
JENNIFER MCNEIL  
PRIMARY EXAMINER  
2/28/06